

Enlistment Early Warning System Study



Briefing to Recruiting Research Consortium

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Purpose of Study



- Develop an Enlistment Early Warning System
- Provide accurate, timely forecasts of enlistments over the next 12 months
- Help justify changes in enlistment incentive programs and missions

Study Tasks



- Collect and process national monthly data
- Estimate forecasting models
 - NPS male 1-3A HSDG+HSSR gross contracts
 - Unemployment
 - Civilian earnings of youth
- Develop EEWS
 - Refine and update system
 - Forecast enlistments
 - Compare enlistments and missions

Time-Series Enlistment Models



- NPS male HSDG+HSSR 1-3A gross contracts
- Independent variables
 - Relative military pay
 - Unemployment
 - Missions, recruiters, advertising, recruiting stations
 - Bonuses, educational benefits, etc.
 - Population, demographic factors
 - Monthly dummies, moving average terms
- National monthly observations
- Separate models for each Service

Time-series Unemployment Forecasting Model



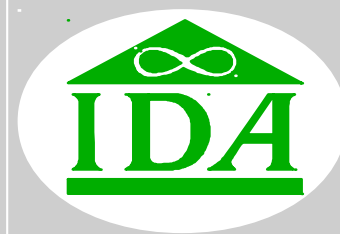
- Unemployment rate
- Function of 15 leading economic indicators
- Monthly dummies and MA terms
- National monthly observations 79/01-00/12

15 Leading Indicators



- **Composite index of 10 leading indicators**
- **Labor force, employment, and unemployment**
 - Average weekly hours, mfg.
 - Average weekly initial claims, unemployment insurance
 - Average weekly overtime hours, mfg.
 - Index of help-wanted advertising in newspapers
- **Output, production, and capacity utilization**
 - Industrial production, nondurable manufactures
 - Industrial production, consumer goods
- **Sales, orders, and deliveries**
 - Mfrs' new orders, durable goods industries
 - Mfrs' new orders, consumer goods and materials
 - Mfrs' unfilled orders, durable goods industries
- **Fixed capital investment**
 - Contracts & orders for plant and equipment
 - Mfrs' new orders, nondefense capital goods
 - New private housing units started
- **Others**
 - Money supply M2
 - Index of 500 stock prices

Time-Series Model For Civilian Earnings of Youth



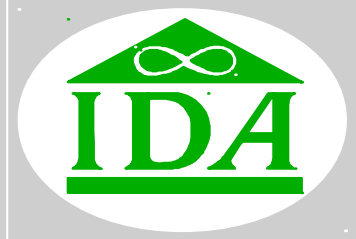
- Growth rate of civilian earnings of youth
- Independent variables
 - Unemployment
 - Consumer Price Index
- National monthly observations 79/01-00/09

Data Collection Status



- Data for Army forecasting model – collected
- Data still to be collected for other Services models
 - Recruiting stations for Navy, Air Force, and Marine Corps
 - Navy Education Benefits
 - Marine Corps bonuses and education benefits
- Data for unemployment and youth earnings models -- collected

Army Forecasting Model: Trends in Series



- Enlistments
- Goals
- Relative military pay
- Population
- Unemployment
- Recruiters, advertising, recruiting stations
- Educational benefits and bonuses

Army Enlistments



- Gross Contracts for NPS male, 1-3A, HSDG & High School Senior enlistments (Tier 1)
- Data from DMDC
- National monthly level observations: 78/10 – 00/09

Army Enlistments



Army Male 1-3A HSDG+HSSR Gross Contracts

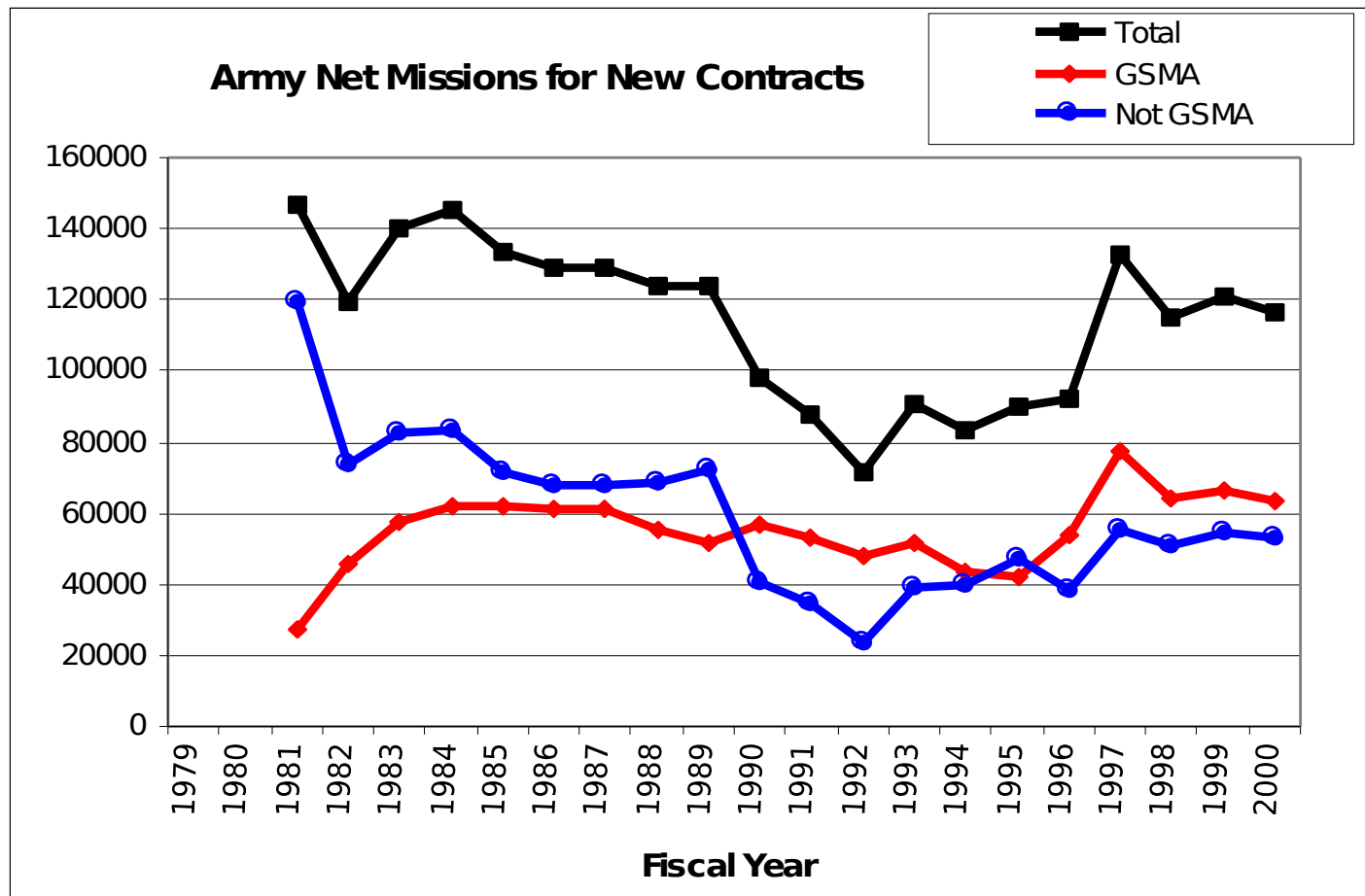


Army Net Missions



- NPS male, 1-3A, HSDG & High School Senior net missions (Tier 1)
- Data from USAREC
- National monthly level observations: 80/10 – 00/09

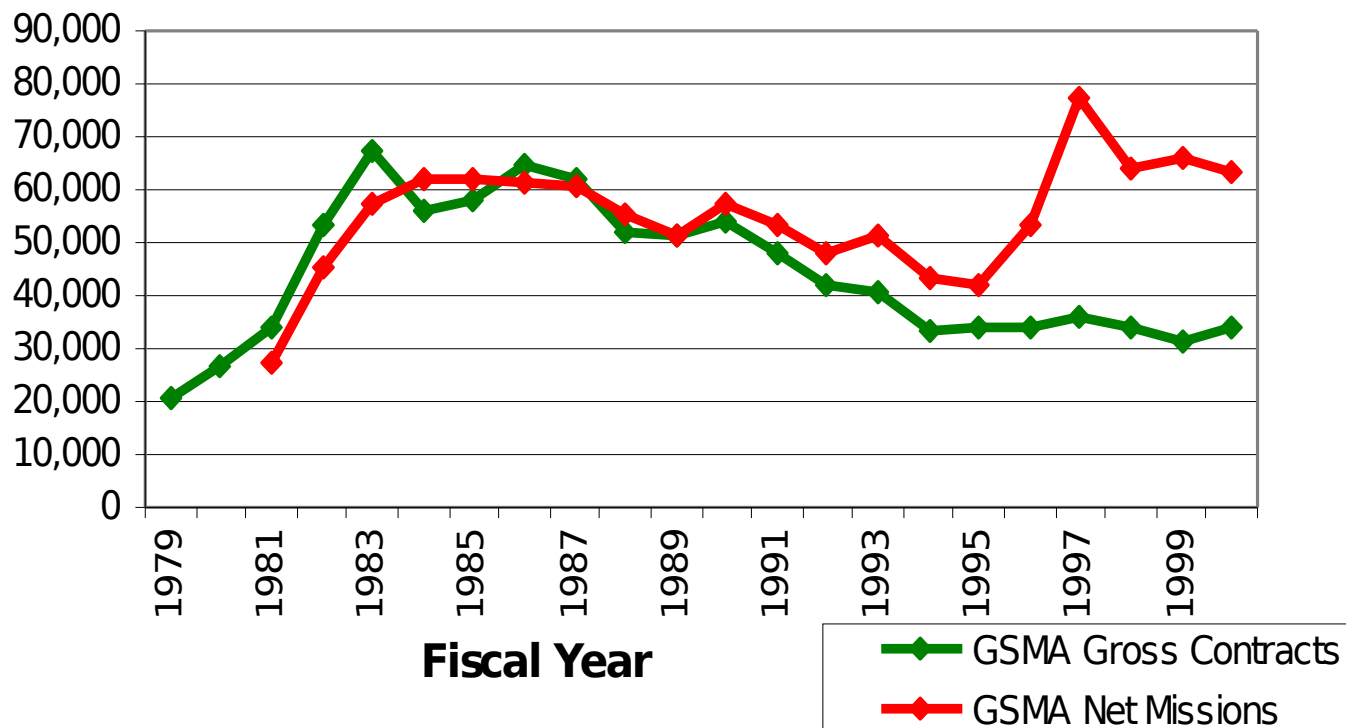
Army Net Missions



Army GSMA Gross Contracts vs. Net Missions



GSMA Gross Contracts vs Net Missions



Relative Military Pay

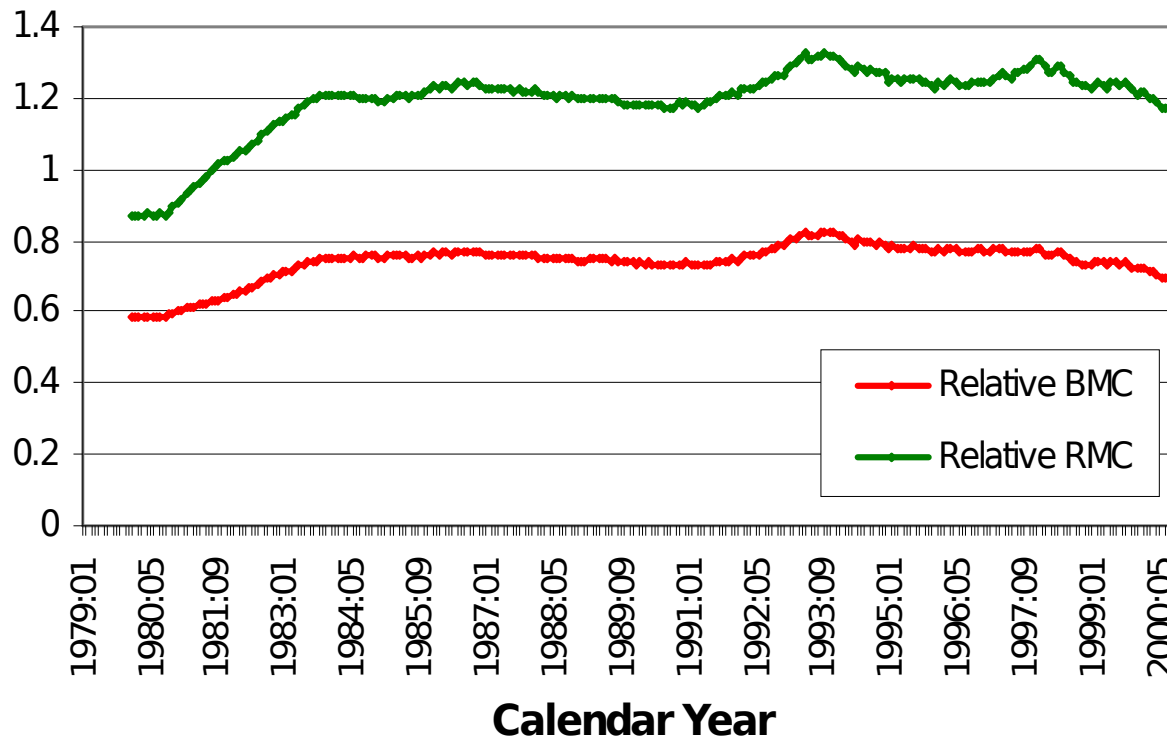


- **Military Pay**
 - BMC: PV Base Pay over 4-year enlistment
 - RMC: PV [Base Pay+Housing Allowances + Subsistence+Tax Advantage] over 4-year enlistment
 - Weighted by actual time in grade each year
 - 12 month moving average
- **Civilian pay**
 - PV civilian earnings of 18-21 year old male HSDGs in-lieu of enlistment
 - 12 month moving average
- **Data sources**
 - Military pay: OSD pay tables
 - Civilian pay: CPS (18-21 HSDG full-time workers)

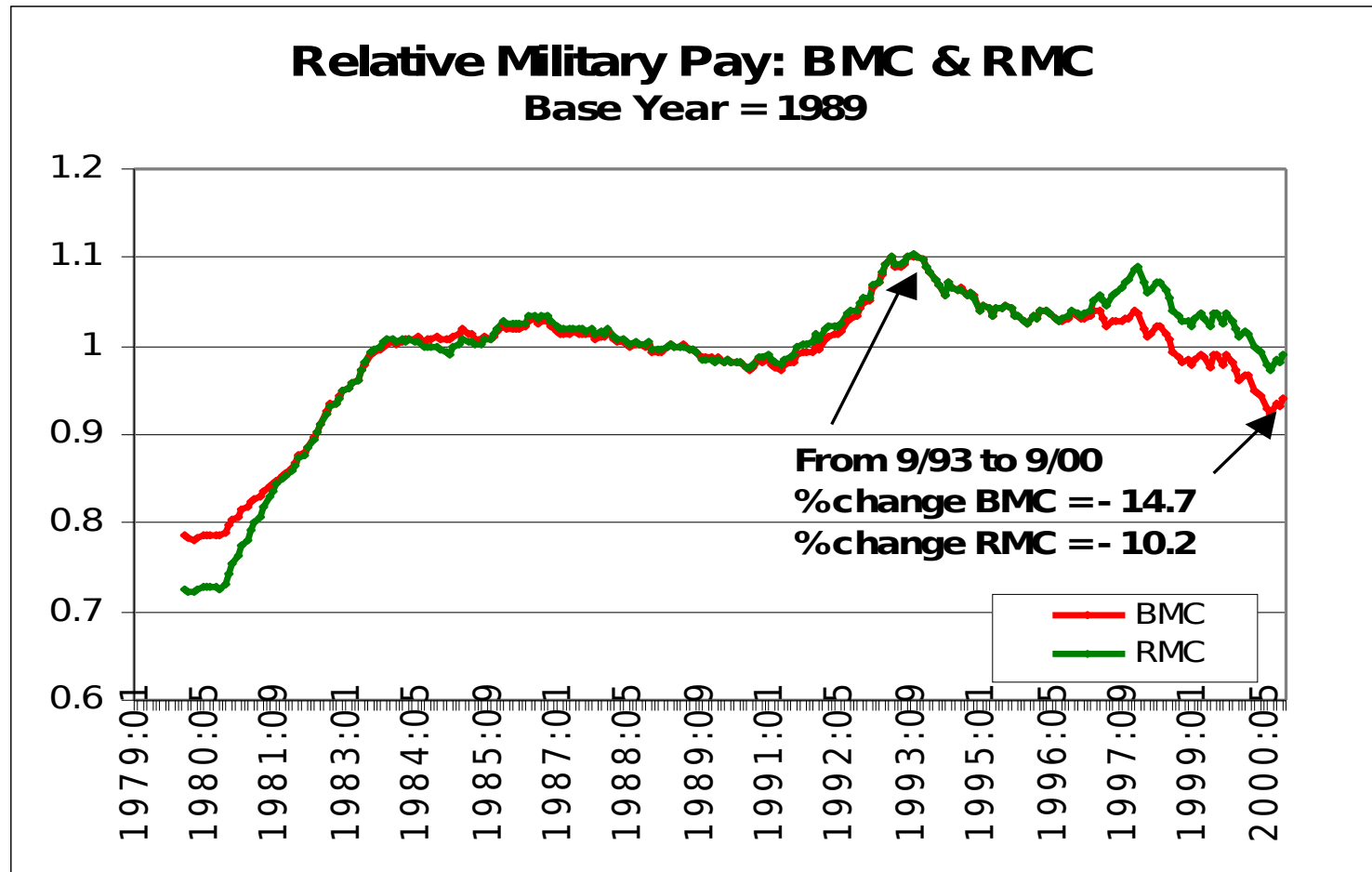
Relative Military Pay



Army Relative Military Compensation 12 Month Moving Average



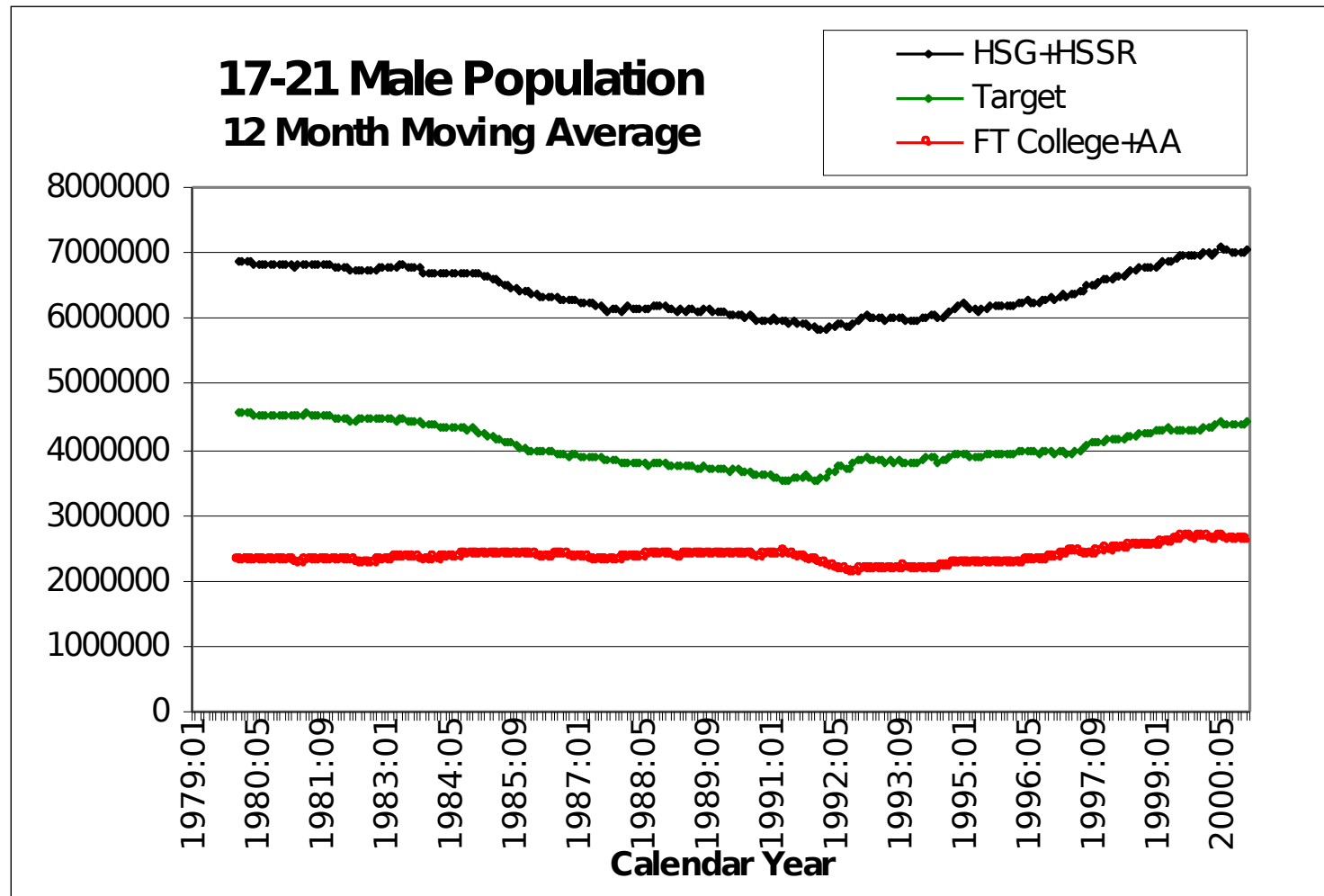
Relative Military Pay Compared to March 1989





- 17-21year old male youth population
 - High school graduates and seniors
 - HSDGs + HSSRs – college enrolled and Associates+
- Population composition
 - Percent college enrolled and Associates+
 - Percent Black
 - Percent Hispanic
- Data from monthly CPS's
- National monthly level data
 - 12 Month moving averages: 79/12 – 00/11

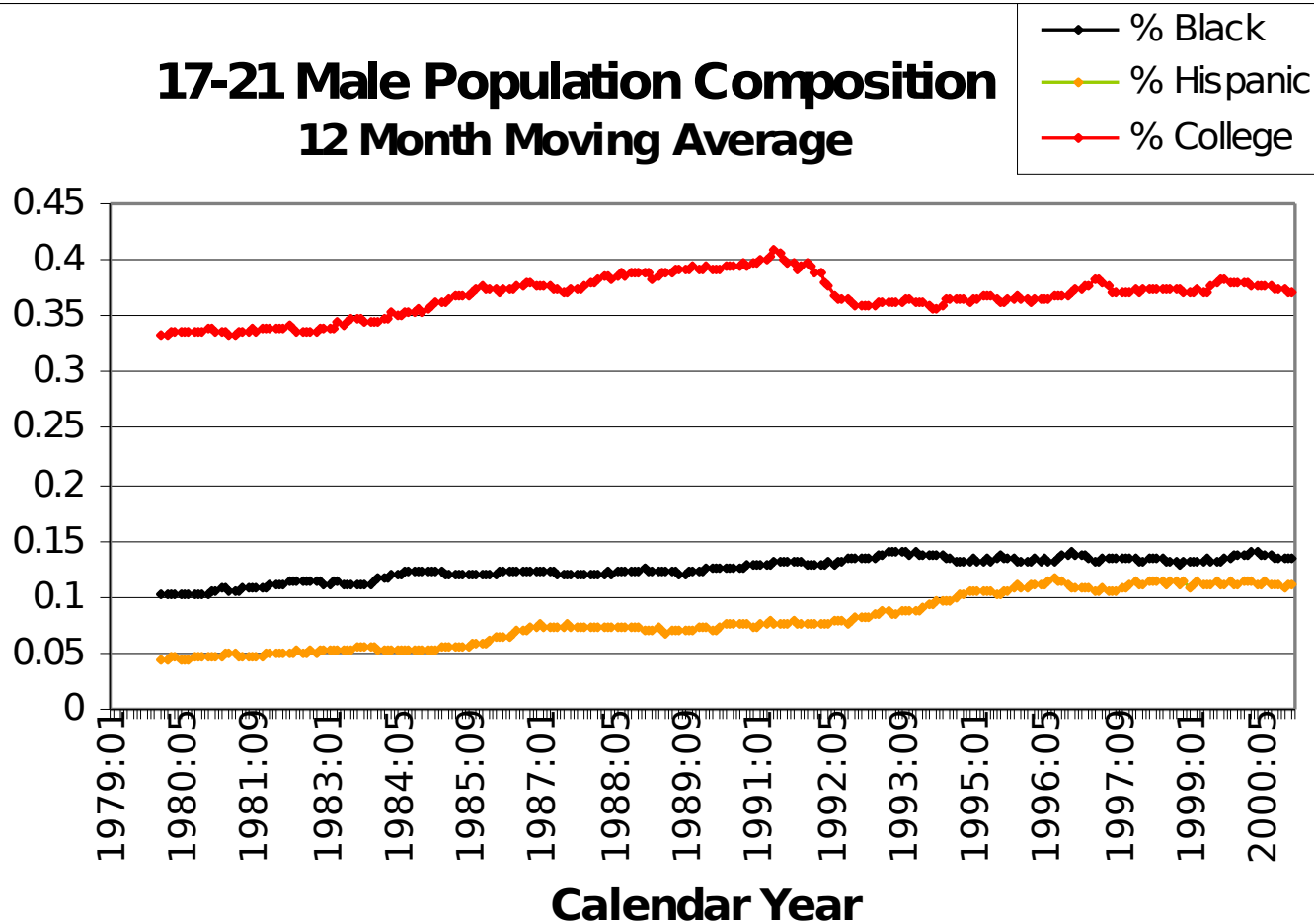
Male Youth Population



Population Composition



17-21 Male Population Composition 12 Month Moving Average

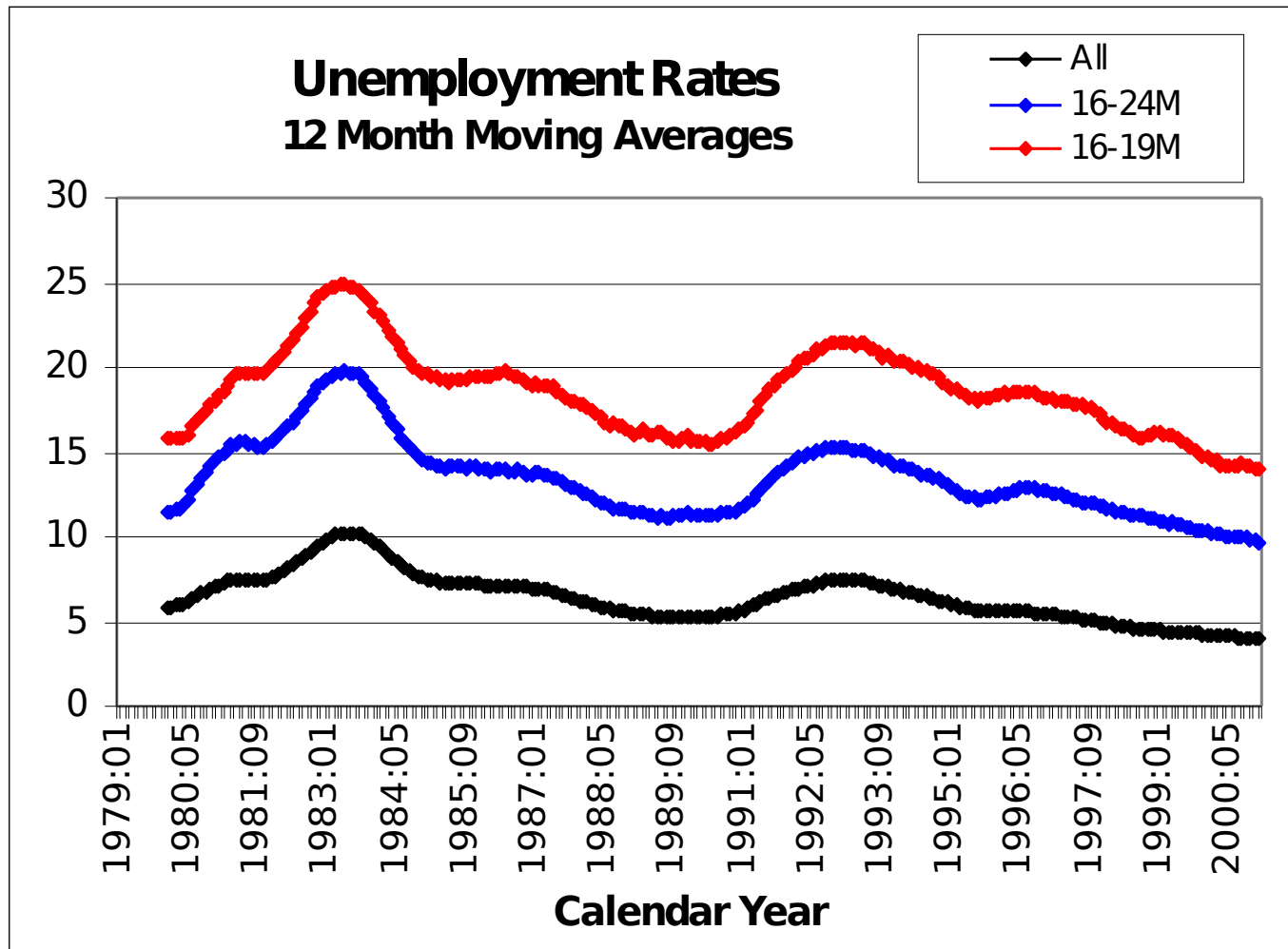


Unemployment Rate



- Unemployment rates for
 - Total 16+ civilian labor force
 - 16-24 Males
 - 16-19 Males
- Data from BLS
- National monthly level observations:
70/01-00/12
- 12 month moving averages

Unemployment Rates





- Regular Army production recruiters
- Data from USAREC
- National monthly level observations:
79/10-00/09
- Chart constructed using FY
observations

Army Recruiters



Army Advertising

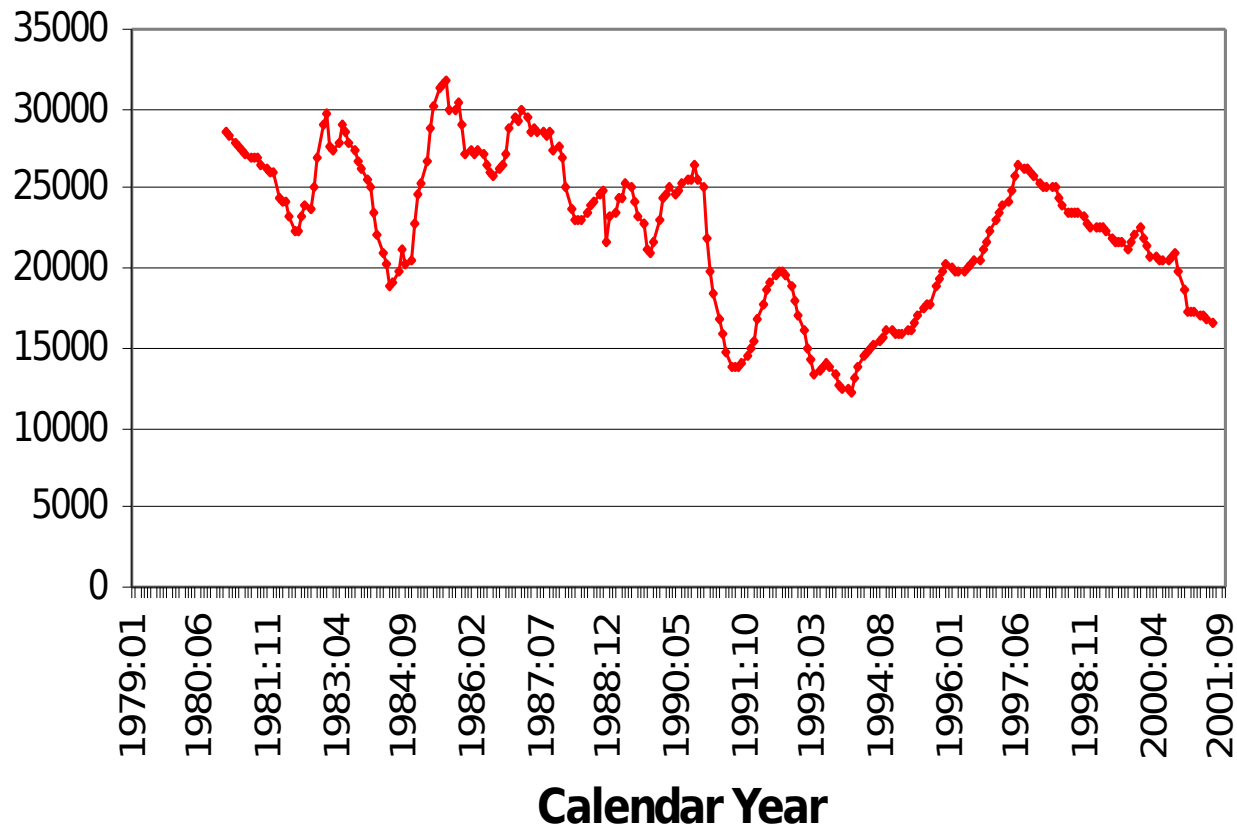


- Media placement costs
 - Sum of current and last 11 months
 - TV, Radio, and Print (General Market program)
 - Adjusted for inflation, using McKann-Erickson cost indexes
- Data from USAREC and M-E
- National monthly level observations: 81/01-00/09

Army Advertising General Market Program



Army Advertising Adjusted for Inflation

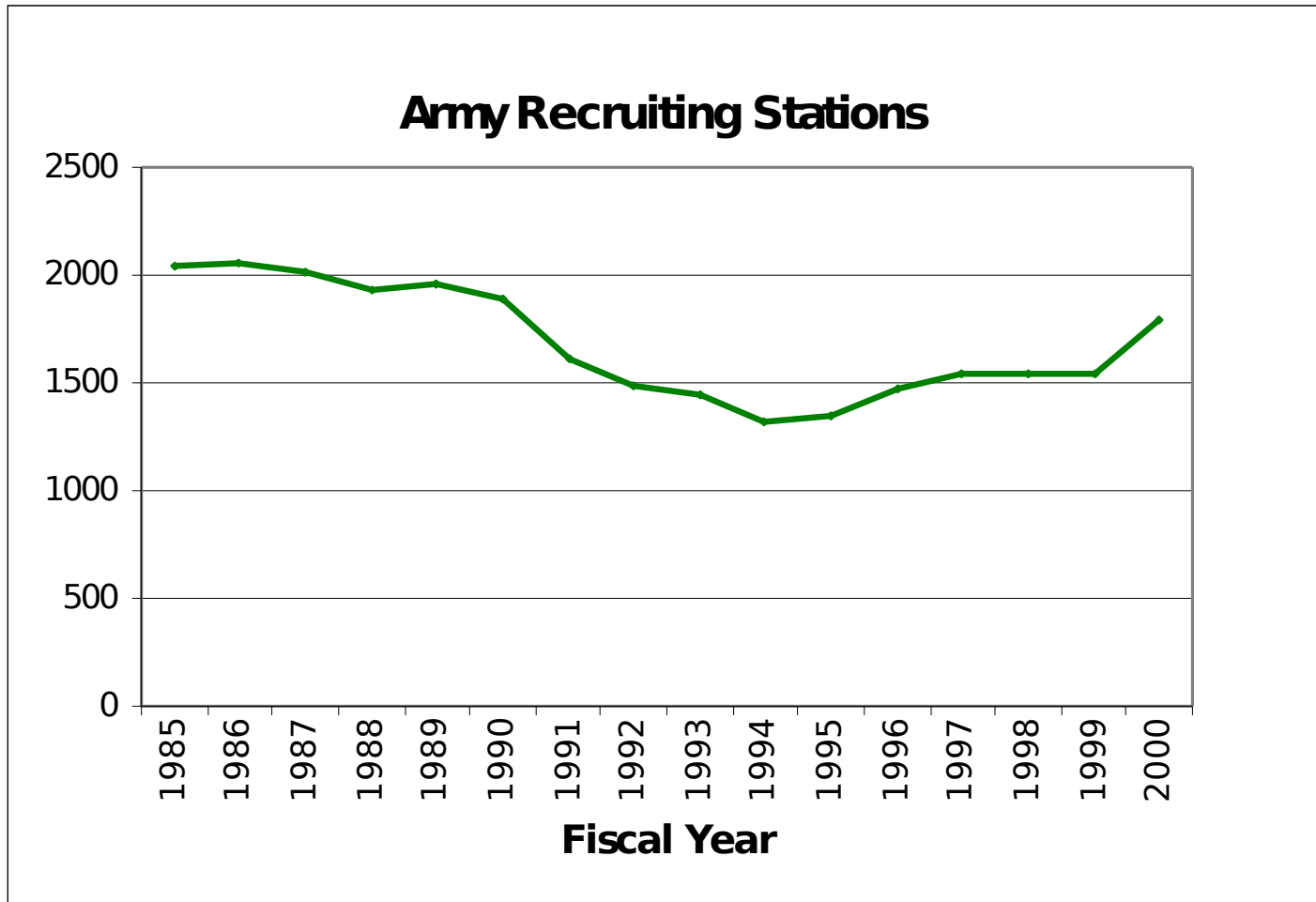


Army Recruiting Stations



- Army recruiting stations assigned
- Data from HQDA
- National FY observations 1985 – 2000

Army Recruiting Stations



Army Education Benefits

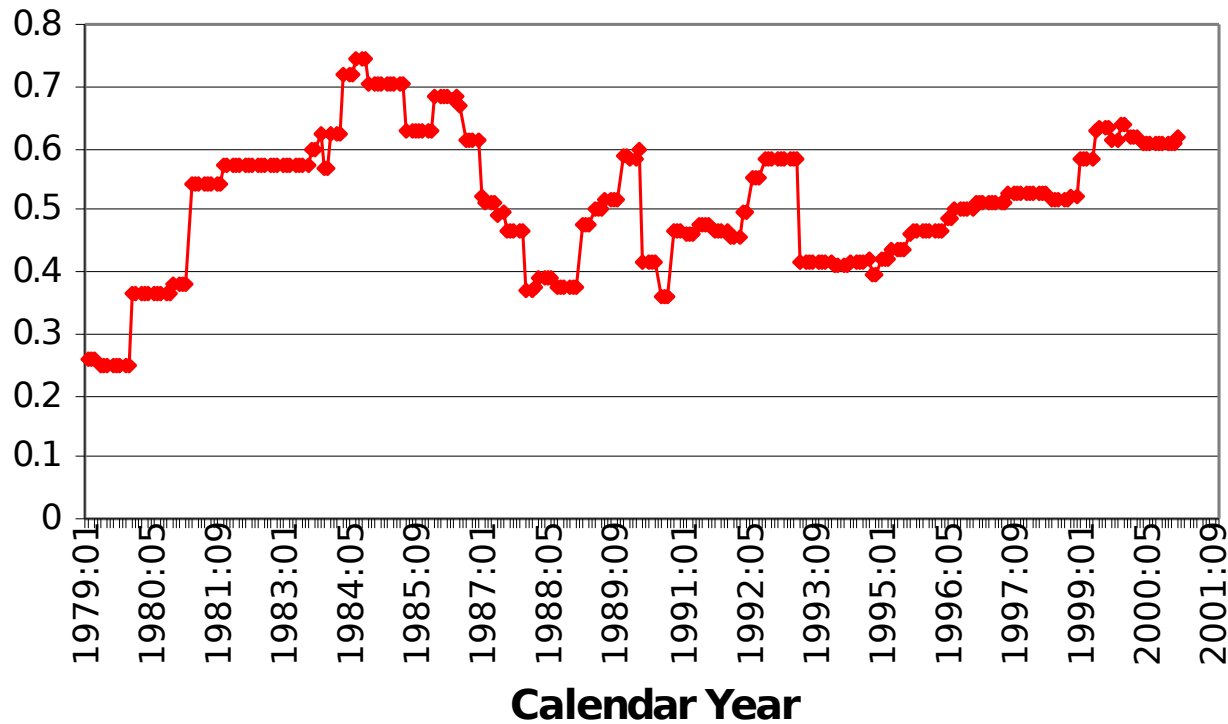


- Expected Education Benefits/College Costs
- Expected Education Benefits =
 $PVACF * CovACF + PV \text{ Basic Benefit} * (1 - CovACF)$
Weighted by TOS & MOS Enlistment Frequencies
- College costs
 - Tuition + Room + Board
 - 4 year public institutions
- Data sources
 - Education Benefits: HQDA, OSD/AP, VA, Rand (test)
 - Hard copy, monthly MOS level data (23,000+ obs.)
 - College Costs: Dept of Ed, CPI
- National monthly level data: 79/01 – 00/12

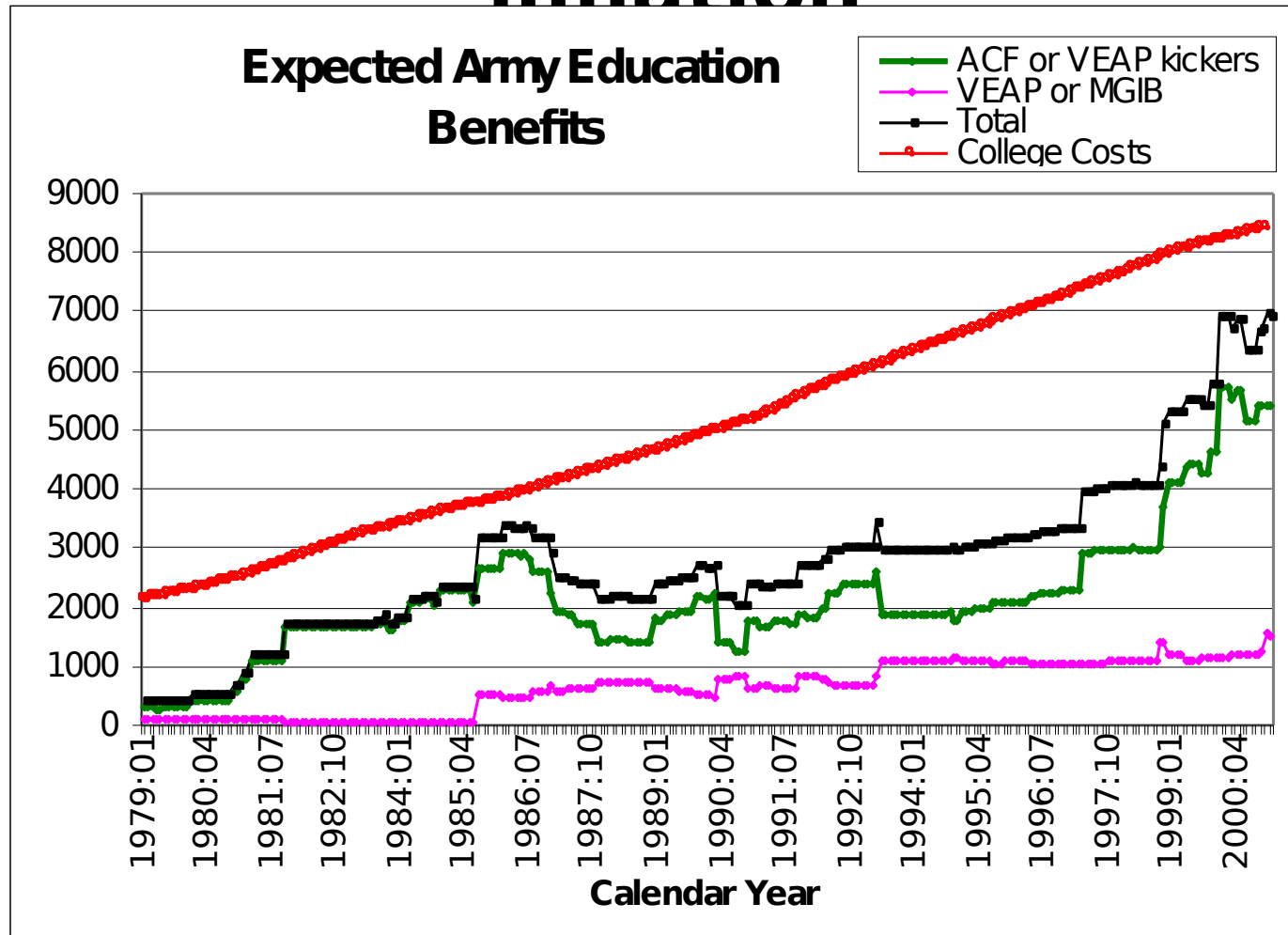
Coverage of ACF and VEAP Kickers



Coverage of ACF & VEAP Kickers



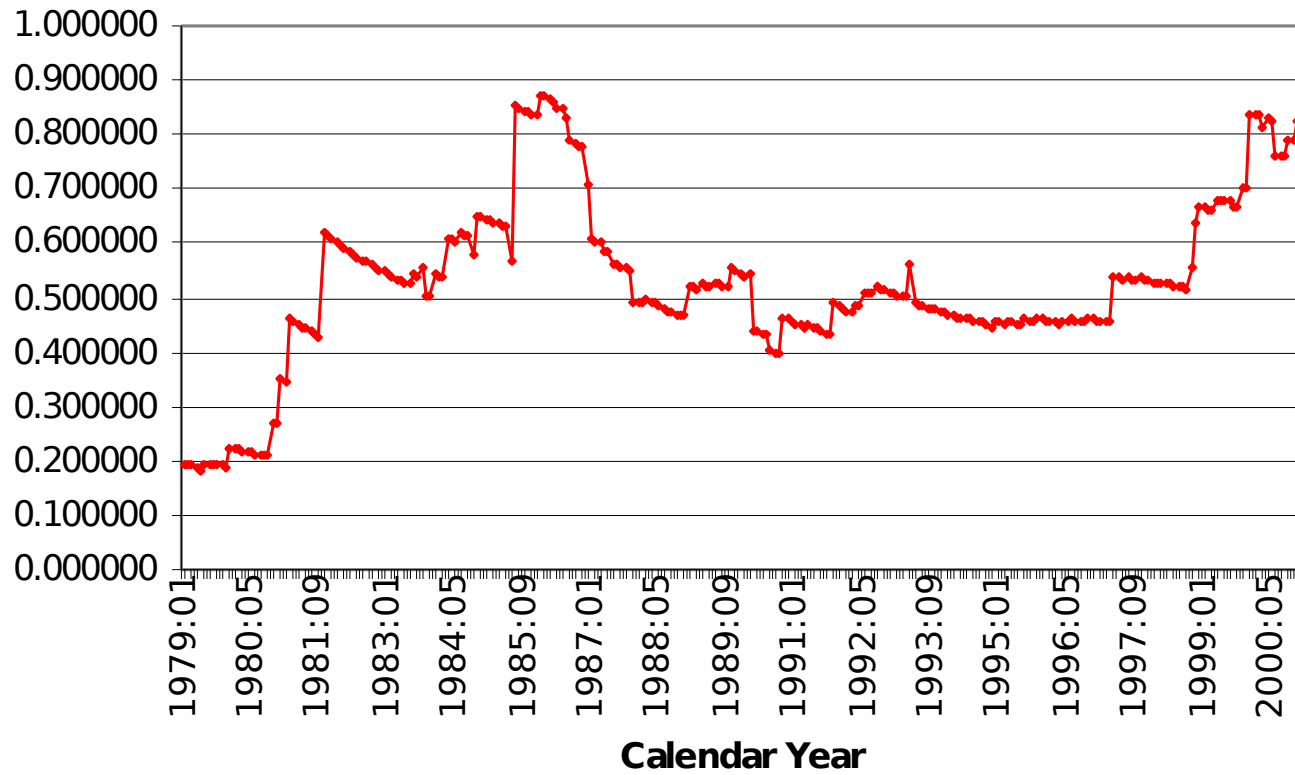
Army Education Benefits Not Adjusted for inflation



Army Education Benefits Adjusted for inflation



Army Expected Education Benefits/College Costs



Army Bonuses

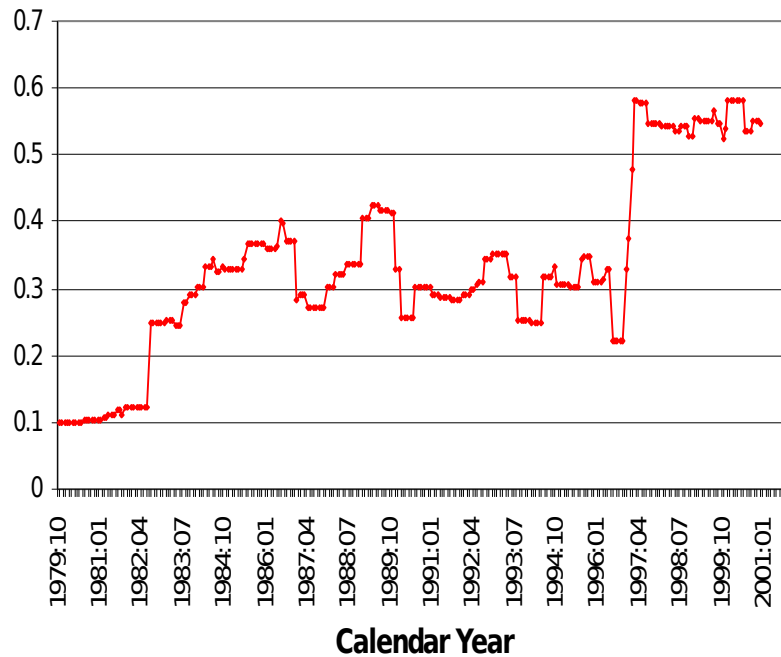


- Index of real expected bonuses
 - Basic + Higrad + Airborne + Quick Ship
 - Increase supply for hard-to-fill MOS's
 - Sum of expected bonuses divided by CPI
- Coverage of “Buyup” program
 - Available June 1988-September 1989
 - Increase TOS for easy-to-fill MOS's
- Data from HQDA and Rand (bonus test)
- National monthly level data 79/10-00/12

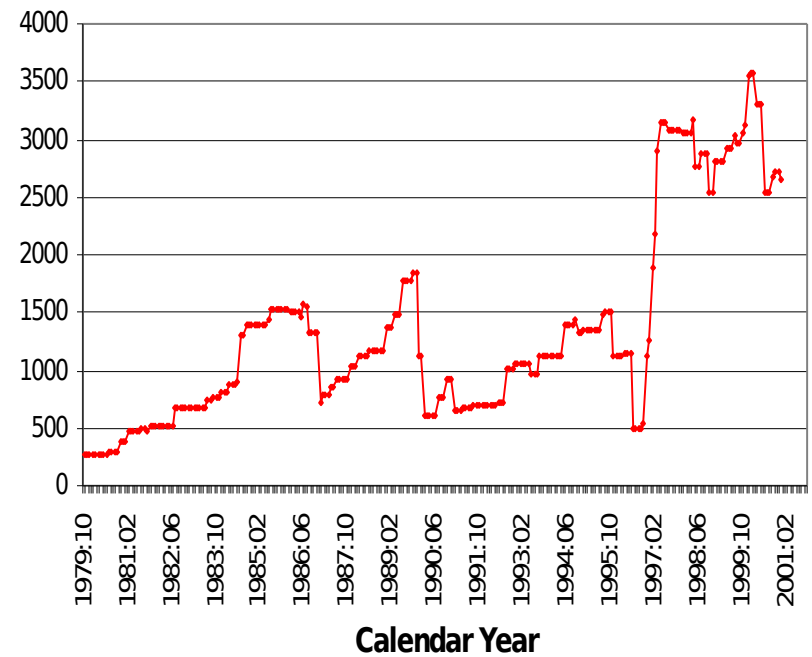
Basic Enlistment Bonus Program



TOS-weighted Basic Bonus Coverage



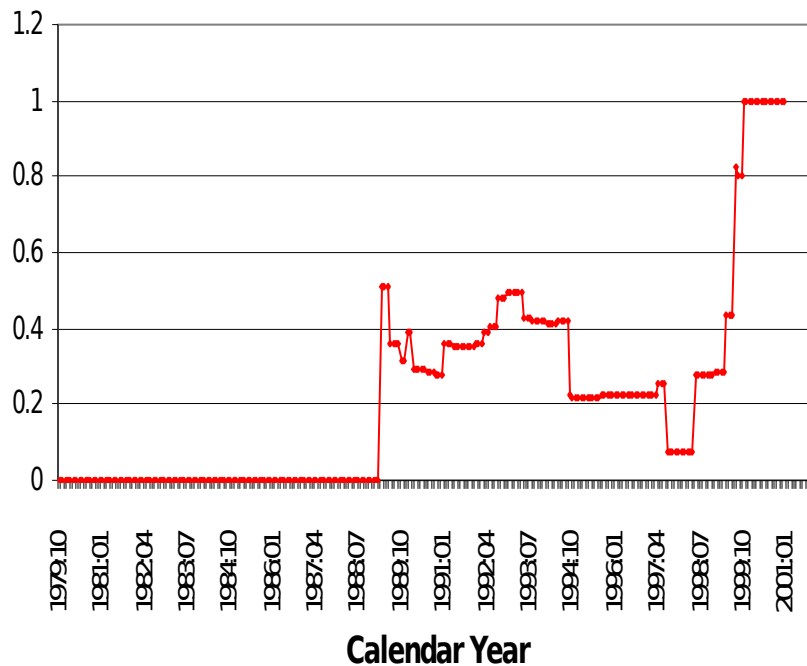
TOS-weighted Expected Basic Bonus



Higrad Bonus Program



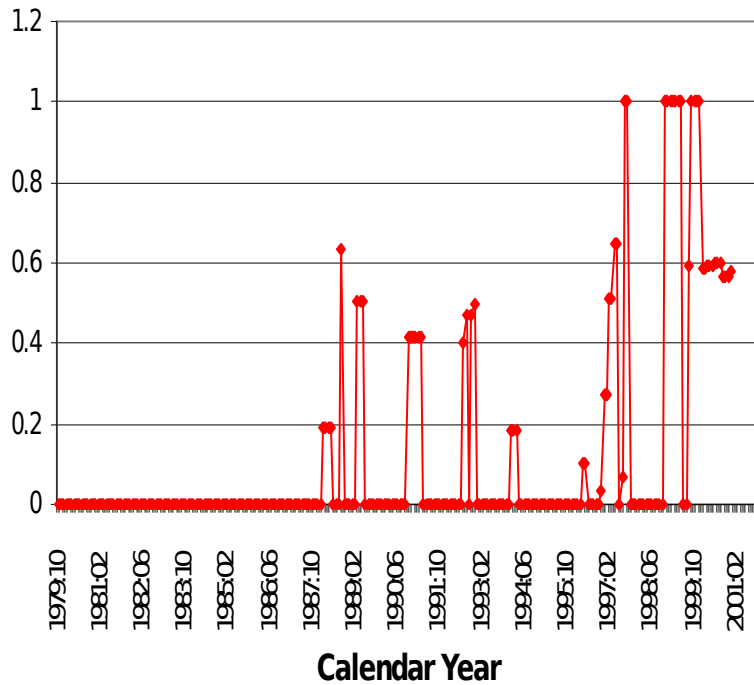
Coverage of HiGrad Bonus



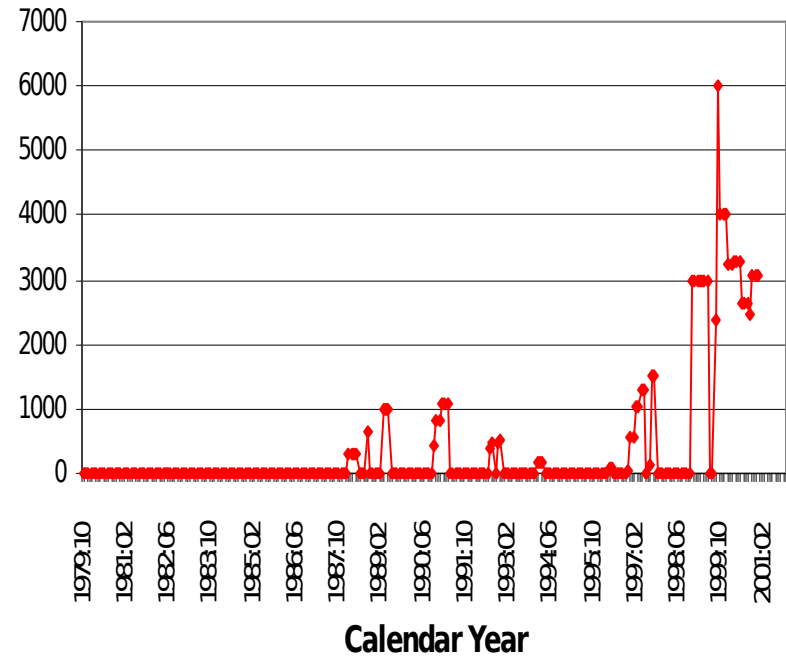
Quick Ship Bonus Program



Coverage of QS



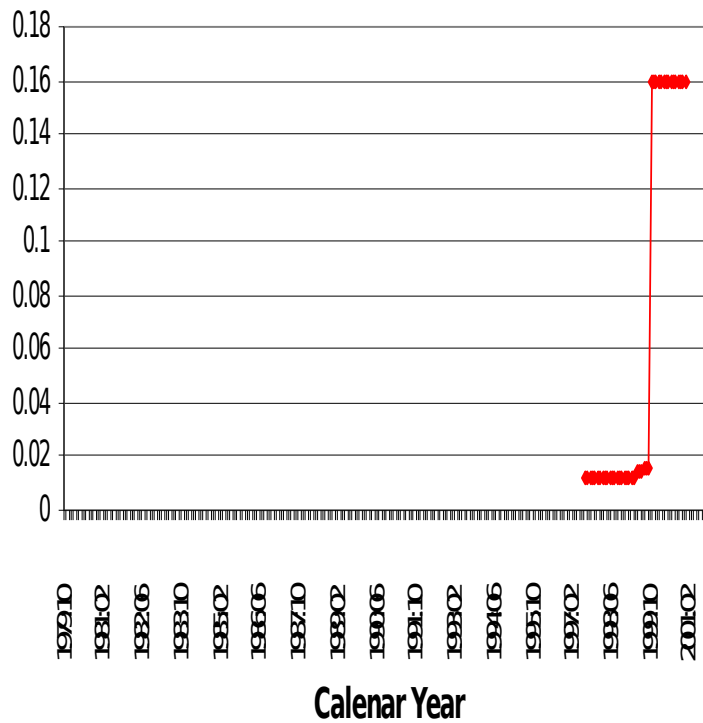
Expected QS Bonus



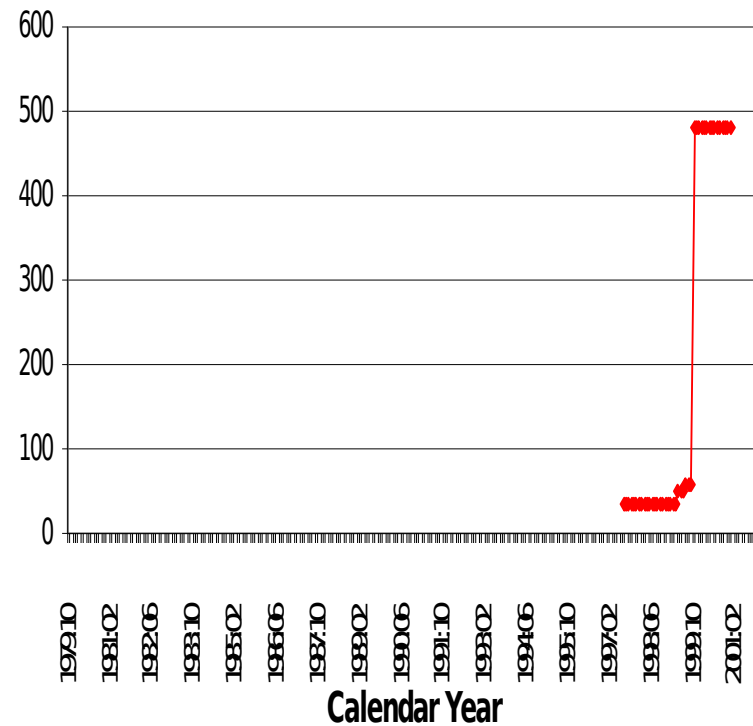
Air Borne Bonus Program



Coverage of AB



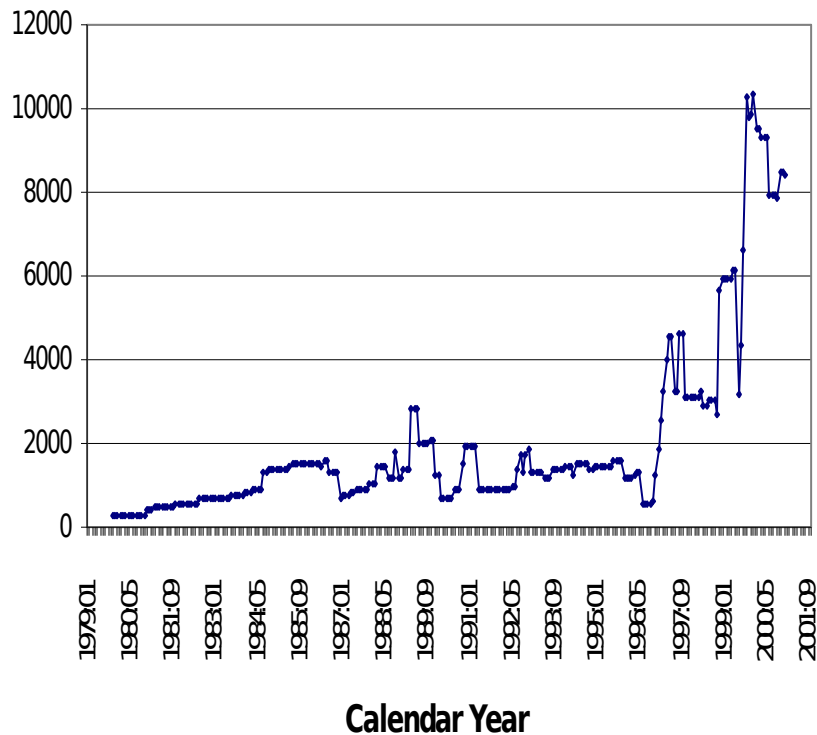
Expected AB



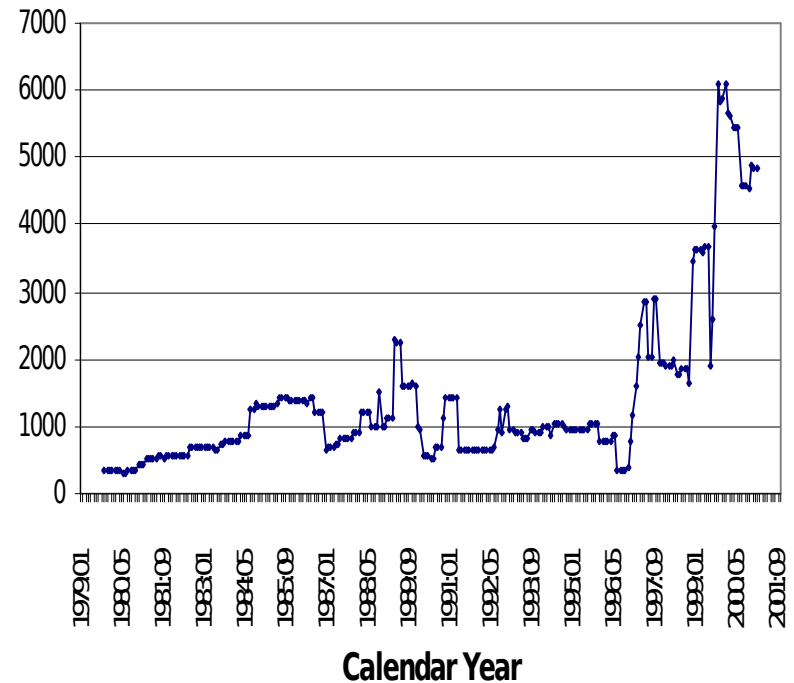
Total Army Bonuses (Hard-to-fill MOS's)



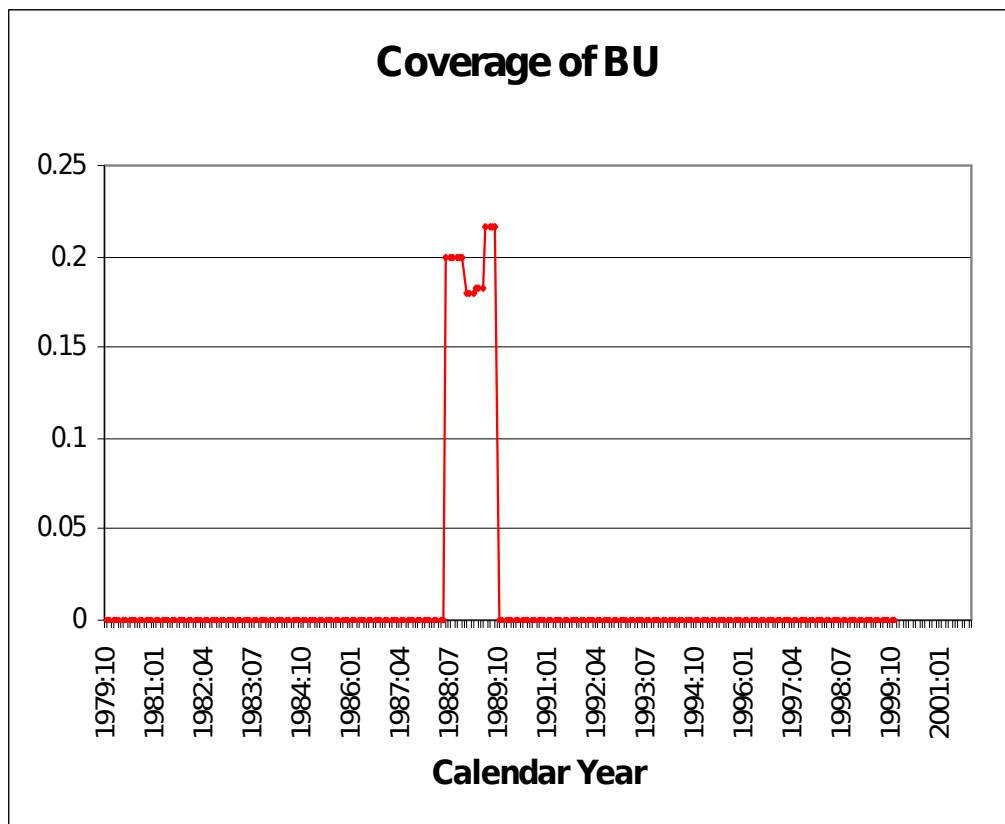
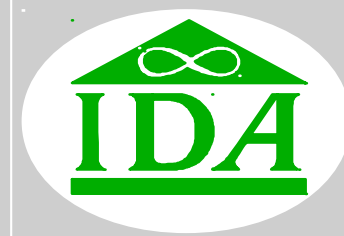
Army Total Expected Bonus



Army Total Expected Bonus/CPI



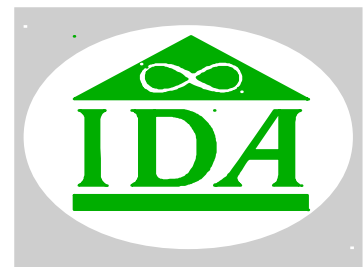
Coverage of Buyup Program (Easy-to-fill MOS's)



Next Steps



- Estimate forecasting models
 - Army enlistments
 - Unemployment rate
 - Youth earnings
- Complete data collection for other Services
- Construct EEWS and forecast enlistments



Backup Slide

Coverage of Loan Repayment Program

